

Warm UP

- Find the equation of the line that passes through $(4, 5)$ and $(2, 5)$
- Find the equation of the line that passes through $(3, -4)$ and $(-1, 8)$

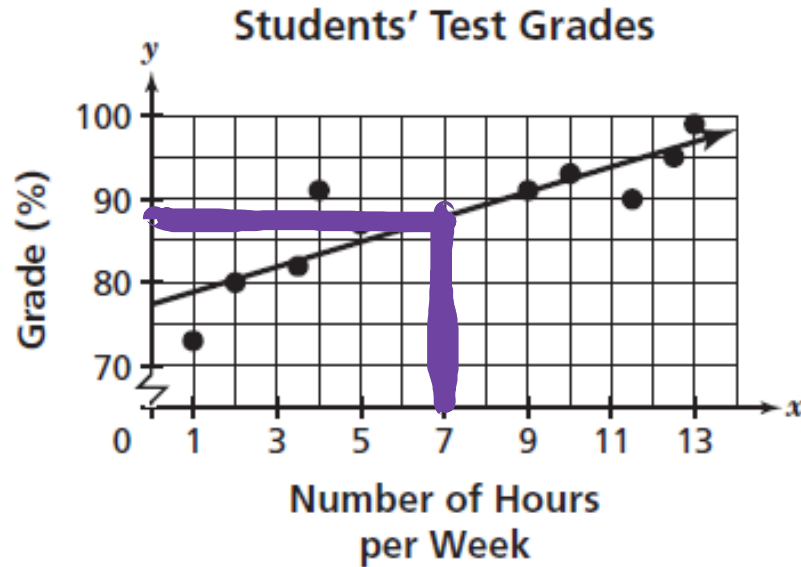
Line of Best Fit

- A line that goes through the middle of the data
- Should have the same number of dots above and below it
.....more or less...

Line of Best Fit Application

- [http://illuminations.nctm.org/
Activity.aspx?id=4186](http://illuminations.nctm.org/Activity.aspx?id=4186)

The scatterplot below shows the relationship between the test grades for 10 students and the numbers of hours they studied per week.



Based on the scatterplot, which is the best prediction of the test grade for a student who studied for 7 hours?

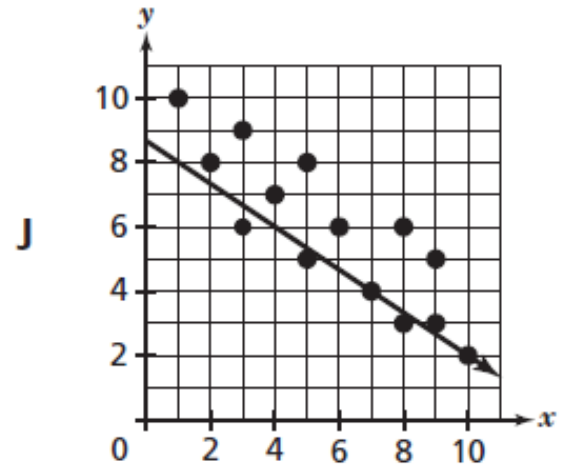
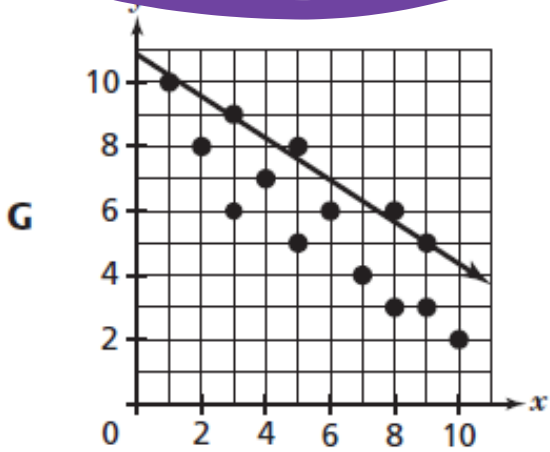
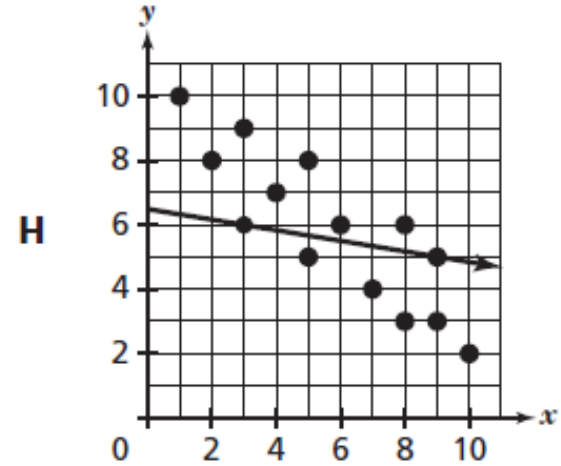
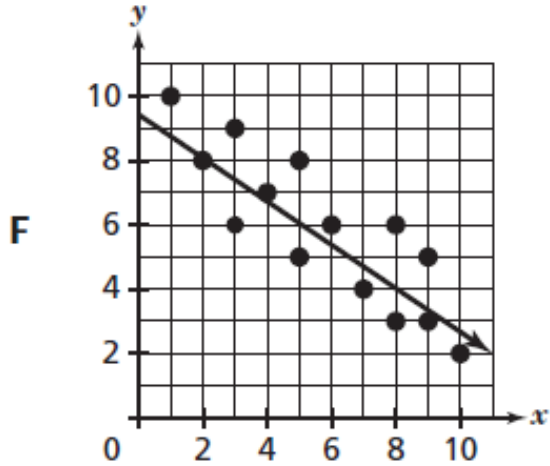
F 98%

G 91%

H 88%

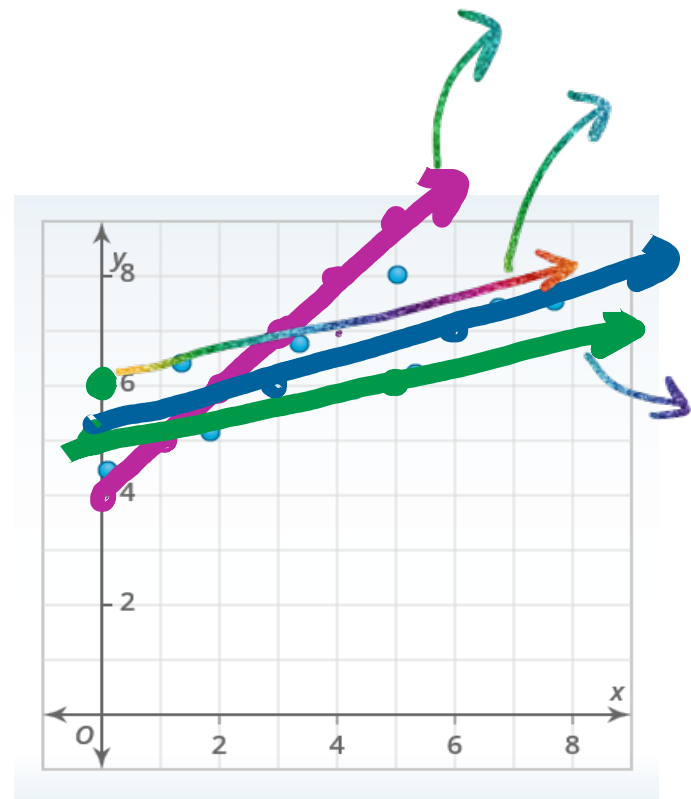
J 82%

Which graph shows the most accurate line of best fit for the given data?

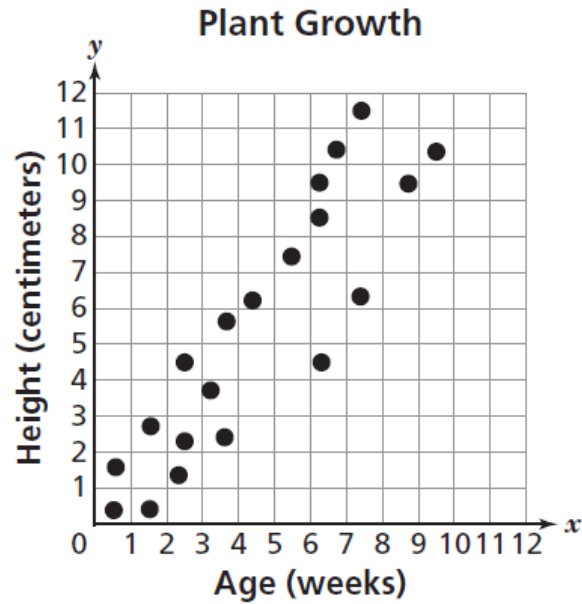


Which of these is the most appropriate line of best fit?

- A) $y = x + 4$
- B) $y = \frac{1}{5}x + 5$
- C) $y = \frac{1}{3}x + 5$
- D) $y = \frac{1}{4}x + 6$



The ages and heights of a number of different plants of the same species are recorded on the scatterplot.



Which equation represents a line of best fit for this scatterplot?

F $y = \frac{5}{7}x$

G $y = \frac{5}{6}x$

H $y = \frac{6}{5}x$

J $y = \frac{9}{5}x$

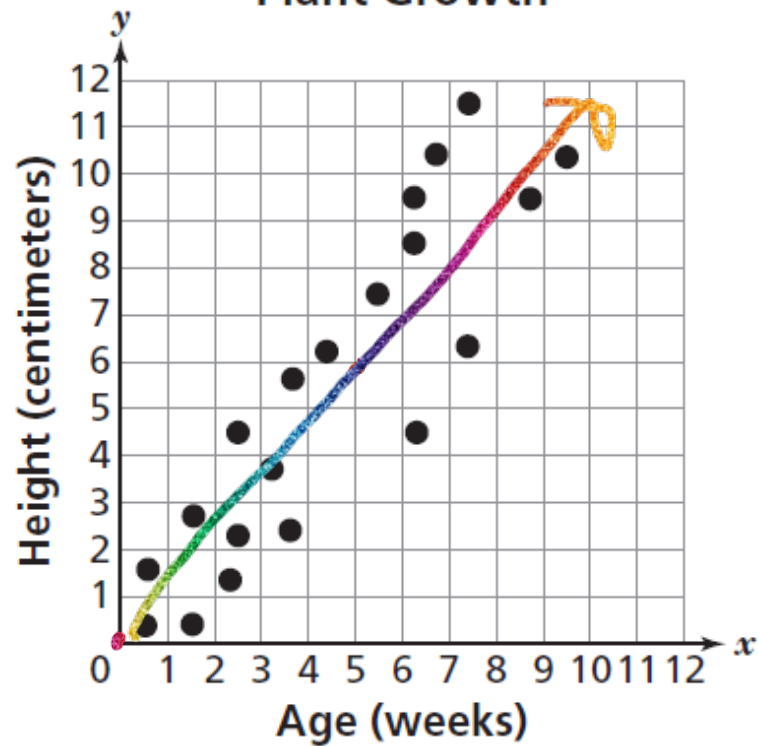
F $y = \frac{5}{7}x$

G $y = \frac{5}{6}x$

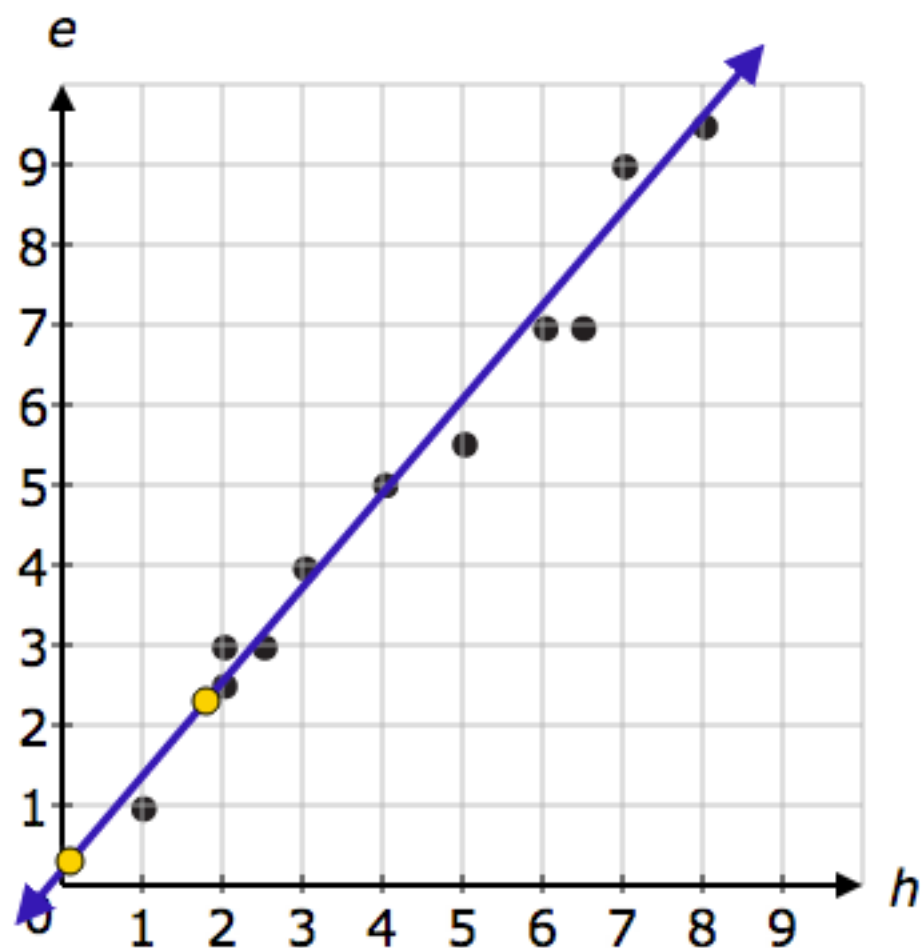
H $y = \frac{6}{5}x$

J $y = \frac{9}{5}x$

Plant Growth



The scatter plot shows the number of eagles, e , observed during h hours of observations. Use the grid to graph the line of best fit.

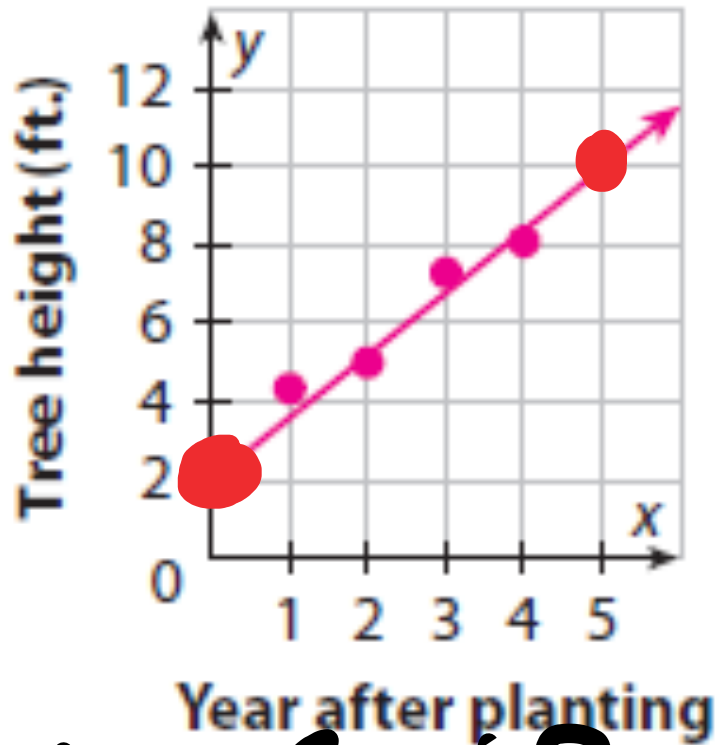


WRITE AN EQUATION

grows 8 feet every year
1 1/2 ft every year

$(0, 2)$ $(5, 10)$

$$y = 8x + 2$$



STARTS AT 2 ft

| City | Latitude | Average Temperature (°C) |
|---------------------------|----------|--------------------------|
| Barrow, Alaska | 71.2°N | -12.7 |
| Yakutsk, Russia | 62.1°N | -10.1 |
| London, England | 51.3°N | 10.4 |
| Chicago, Illinois | 41.9°N | 10.3 |
| San Francisco, California | 37.5°N | 13.8 |
| Yuma, Arizona | 32.7°N | 22.8 |
| Tindouf, Algeria | 27.7°N | 22.8 |
| Dakar, Senegal | 14.0°N | 24.5 |
| Mangalore, India | 12.5°N | 27.1 |

Estimate the average temperature in Vancouver, Canada at 49.1°N.

The equation for the line of best fit is $y \approx -0.693x + 39.11$.

Graph the line of best fit with the data points in the scatter plot.

Use the TRACE function to find the approximate average temperature in degrees Celsius for a latitude of 49.1°N.

The average temperature in Vancouver should be around 5°C.

| City | Latitude | Average Temperature (°F) |
|------------------------|----------|--------------------------|
| Fairbanks, Alaska | 64.5°N | 30 |
| Moscow, Russia | 55.5°N | 39 |
| Ghent, Belgium | 51.0°N | 46 |
| Kiev, Ukraine | 50.3°N | 49 |
| Prague, Czech Republic | 50.0°N | 50 |
| Winnipeg, Manitoba | 49.5°N | 52 |
| Luxembourg | 49.4°N | 53 |
| Vienna, Austria | 48.1°N | 56 |
| Bern, Switzerland | 46.6°N | 59 |

Estimate the average temperature in degrees Fahrenheit in Bath, England, at 51.4°N.

The equation for the line of best fit is $y \approx -1.60x + 131.05$.

Use the equation to estimate the average temperature in Bath, England at 51.4°N.

$$y \approx -1.60x + 131.05$$

Homework

- Worksheet